Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 12/18/12 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.swr.noaa.gov/ocap/doss.htm.

DWR: Edmund Yu, Kevin Reece, Tracy Pettit, Andy Chu, Mike Ford, James Gleim
NMFS: Barb Byrne, Jeff Stuart, Barbara Rocco, Bruce Oppenheim, Garwin Yip
Reclamation: Russ Yaworsky, Josh Israel
DFG: Bob Fujimura, Robert Vincik, Matt Johnson*, Joe Johnson
EPA: Erin Foresman, Bruce Herbold
FWS, SWRCB, USGS: not present

*Matt Johnson (DFG) was asked to join to discuss the Mill & Deer Creek proposal, which is in lieu of monitoring using RST data.

Agenda
1. Fish monitoring
2. Current operations
3. RPA Action IV.3 language clarification
4. Request from WOMT for winter-run JPE
5. Comments on Deer/Mill Creek RST report
6. Holiday schedule

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

Location	Chipps Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	Beach Seines	Knights Landing RST	Tisdale Weir RST
Sample Date	12/10, 14	12/10, 12, 14	12/10, 12, 14	12/10–12/14	12/11–12/15	12/11–12/15
Total Catch	**112**	**10**	**0**	**234**	**45**	**47**
FR	1	5		80	10	22
WR				75	13	16
SR				65	8	5
LFR	4			5	3	1
Ad-Clipped Chinook	10	5		8	11	2
DS	9			1		
Splittail	28					
Longfin	60					
SH (ad-clip)						3

SH (wild)						
W. Temp. (avg. °F)	53.6	50.0	43.4	51.4	52.0	50.0
Flows (avg. cfs)					13408	11212
Turbidity (avg. NTU)	96.0	76.4	14.8	42.4	71.3	38.5
WR/LFR Avg. CPUE					0.078	0.25
FR/SR Avg. CPUE					0.089	0.32

Key: FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = Longfin smelt; CPUE = catch per unit of effort; N/A = not available

Fish Monitoring: Trapping at Tisdale and Knights Landing was discontinued as of 12/15. There was a drop in catch that coincided with a drop in flows. Three ad-clipped steelhead (121, 136, and 165 mm) were caught at Tisdale (origin is unknown because hatcheries do not tag juveniles). Flows should increase again with the coming storm after Thursday and the Tisdale weir might overtop again this coming week. There is no sign of any fish at the weir right now. No steelhead were caught at Knights Landing.

Spring-Run Surrogate Release: The first group of 77,000 late-fall run (average size = 135 mm) from Coleman National Fish Hatchery (Coleman) will be released (as a spring-run surrogate group) in Battle Creek today. These are 100% marked with coded wire tags (CWTs). It will most likely take from 3 days (with a storm event) to 1 week for these fish to show up at the fish facilities in the Delta.

Israel (Reclamation) asked whether the next surrogate release date could be moved forward to coincide with coming weather events. The next release is scheduled for 1/17/13. The first release group will "ride" the storm coming through. DOSS expects exports would be managed to an OMR flow of no more negative than -5,000 cfs beginning on January 1, 2013 (because of RPA Action IV.2.3). Now would be a good time to have acoustically tagged fish in the water. We've seen a significant pulse of winter run coming down the Sacramento River. Oppenheim agreed to discuss with Coleman staff the possibility of moving the second spring-run surrogate release date and DOSS agreed to discuss the timing of the next release again later.

Fish Salvage[1]: From 12/10 to 12/16, the fish salvage facilities saw a large increase in the salvage of ad-clipped Chinook salmon compared to the previous reporting period: 543 vs. 27 respectively; most were at the SWP and were predominantly late-fall-run or fall-run size. Some winter-run-size salmon were also salvaged. The number of wild Chinook salmon salvaged was similar to that of the previous reporting period: 48 vs. 46. More winter run and fall run were salvaged. Daily loss density for older juvenile non-clipped Chinook ranged from 0.8 to 3.1 fish/TAF; these were reported for 4 of the 7 days. Four wild steelhead were salvaged at the SWP

[1]Salvage is the estimated number of fish collected by a fish salvage facility during a specified time period. Daily salvage is the most commonly used metric and represents the summation of shorter salvage estimates. Detailed descriptions of how salvage and Chinook salmon loss are calculated are described in "Chinook Salmon Loss Estimation for Skinner Delta Fish Protective Facility and Tracy Fish Collection Facility" and can be obtained in the "Salmon Loss Estimation" folder at: ftp://ftp.delta.dfg.ca.gov/salvage/

on 12/12 for a loss density of 0.8 fish/TAF; the seasonal salvage total for steelhead is 35. No green or white sturgeon was observed at either facility.

The graphs and tables provided below for salvage of Chinook salmon and steelhead were compiled on 12/17/12 by Fujimura (DFG).

Complied by Bob Fujimura on December 17, 2012

Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during November 25 through December 16, 2012. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during November 25 through December 16, 2012. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

DCC Weekly Salvage Update
Reporting Period: Dec 10-16, 2012
Prepared by Bob Fujimura on December 17, 2012
Preliminary Results -Subject to Revision

Criteria	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	Trend
Loss Densities								
Wild older juvenile CS	0.0	0.0	2.1	0.8	0.0	3.1	2.3	↗
Wild steelhead	0.0	0.0	0.8	0.0	0.0	0.0	0.0	↗
Exports								
SWP daily export	6,272	13,020	13,059	13,059	13,141	13,091	14,126	↗
CVP daily export	5,470	7,744	8,762	8,754	8,769	8,664	8,650	↗

Loss Density = fish loss/TAF water export = AF, Trend = compared to previous week, wild = adipose fin present

Chinook Salmon Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	20	73	↗	28	93
	Spring Run	0	0	→	0	0
	Late Fall Run	22	63	↘	51	192
	Fall Run	6	28	↗	15	49
	Unclassified	0	0	→	8	5
	Total	48	184		102	339
Hatchery						
	Winter Run	25	111	↗	25	111
	Spring Run	0	0	→	0	0
	Late Fall Run	322	1,262	↗	341	1,330
	Fall Run	196	725	↗	204	747
	Unclassified	0	0	→	0	0
	Total	543	2,099		570	2,188

Race determined by size at date of capture. Hatchery adipose fin missing

Steelhead Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	4	17.3	↗	9	35
Hatchery	0	0	→	0	0
Total	4	17.3		9	35

State Water Project loss = salvage x 4.33, Central Valley Project loss = salvage x 0.69

NOTE: Below are graphs provided by DWR through 12/17/12 for hatchery Chinook salmon loss and older juvenile salmon and steelhead in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

HATCHERY (ADIPOSE-FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released	Total Entering Delta	% Loss[1]	First Concern Level	Second Concern Level	Date of First Loss	Date of Last Loss
11/5/2012	F	Mokelumne River Hatchery	Mokelumne River	**	328.90	100,633	n/a	0.327	n/a	n/a	12/5/2012	12/16/2012
11/29/2012	LF	Coleman NFH	Battle Creek	Production	965.56	848,000	n/a	0.114	n/a	n/a	12/9/2012	12/16/2012

SWP coded-wire tags read 10/1/2012 through 12/15/2012 (Some tags still need to be read)

CVP coded-wire tags read 10/1/2012 through 12/16/2012

[1]LF & F % Loss = (Confirmed Loss/Number Released)*100; W% Loss = (Confirmed Loss/Total Entering Delta)*100

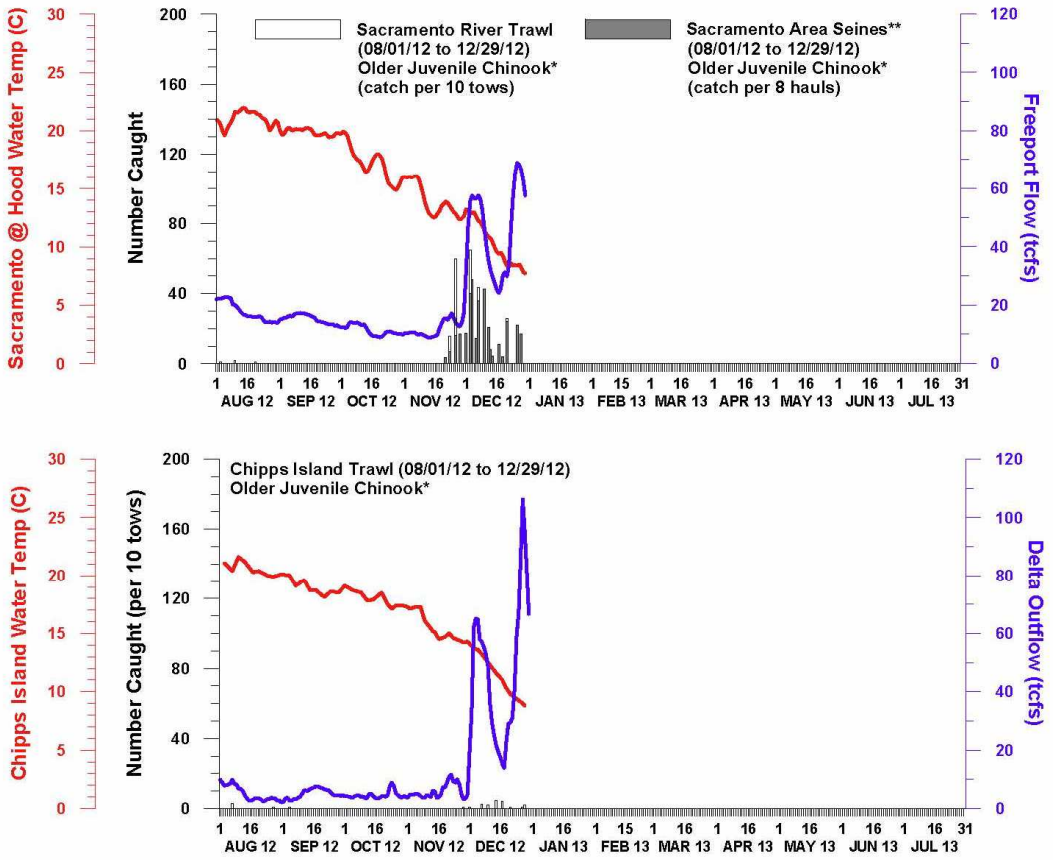
** Information not yet available

DWR-DES Revised 12/17/2012 (CORRECTED)

Preliminary, subject to revision

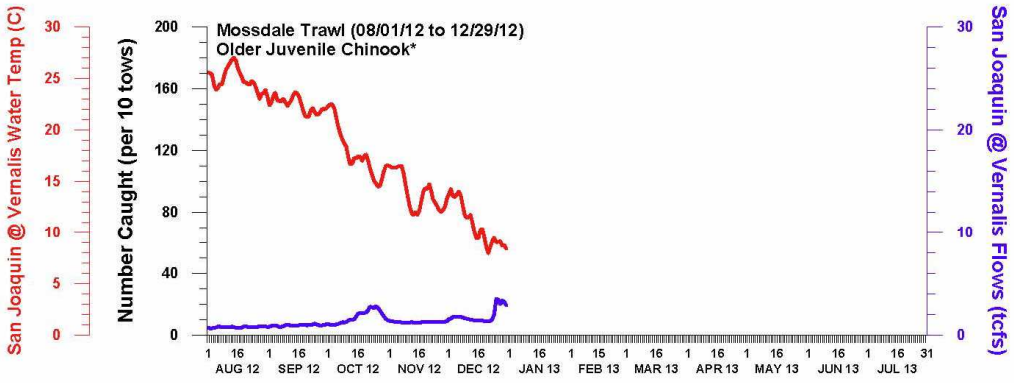
No CWT winter-run Chinook have been released from the hatcheries. There should be no hatchery winter run identified at the fish facilities until the hatchery release of winter run, most likely in February 2013; however, spring-run surrogate releases can now be tracked because the first CWT group was released today (12/18/12). Most of the CWT fish seen now are from either Coleman or the Mokelumne River Hatchery releases. There has been no winter-run incidental take level established for this water year.

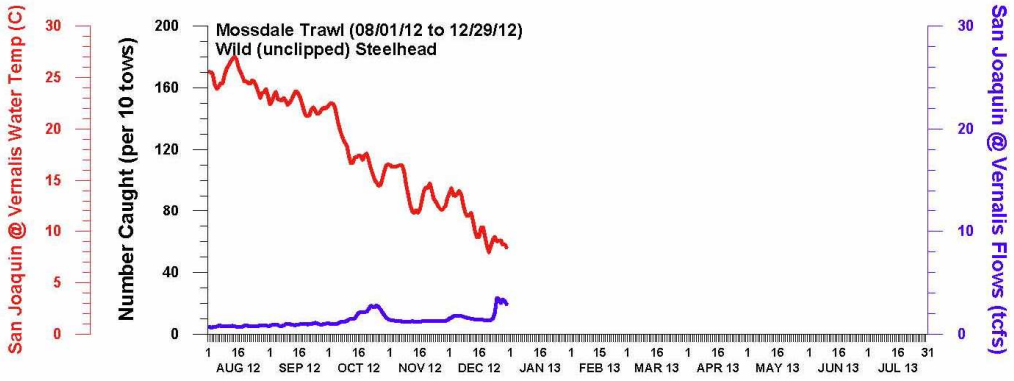
NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER & CHIPPS ISLAND



DWR-DES 31 DEC 2012
Preliminary data from FWS and CDEC; subject to revision.
*Older juvenile Chinook defined as any Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
**Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

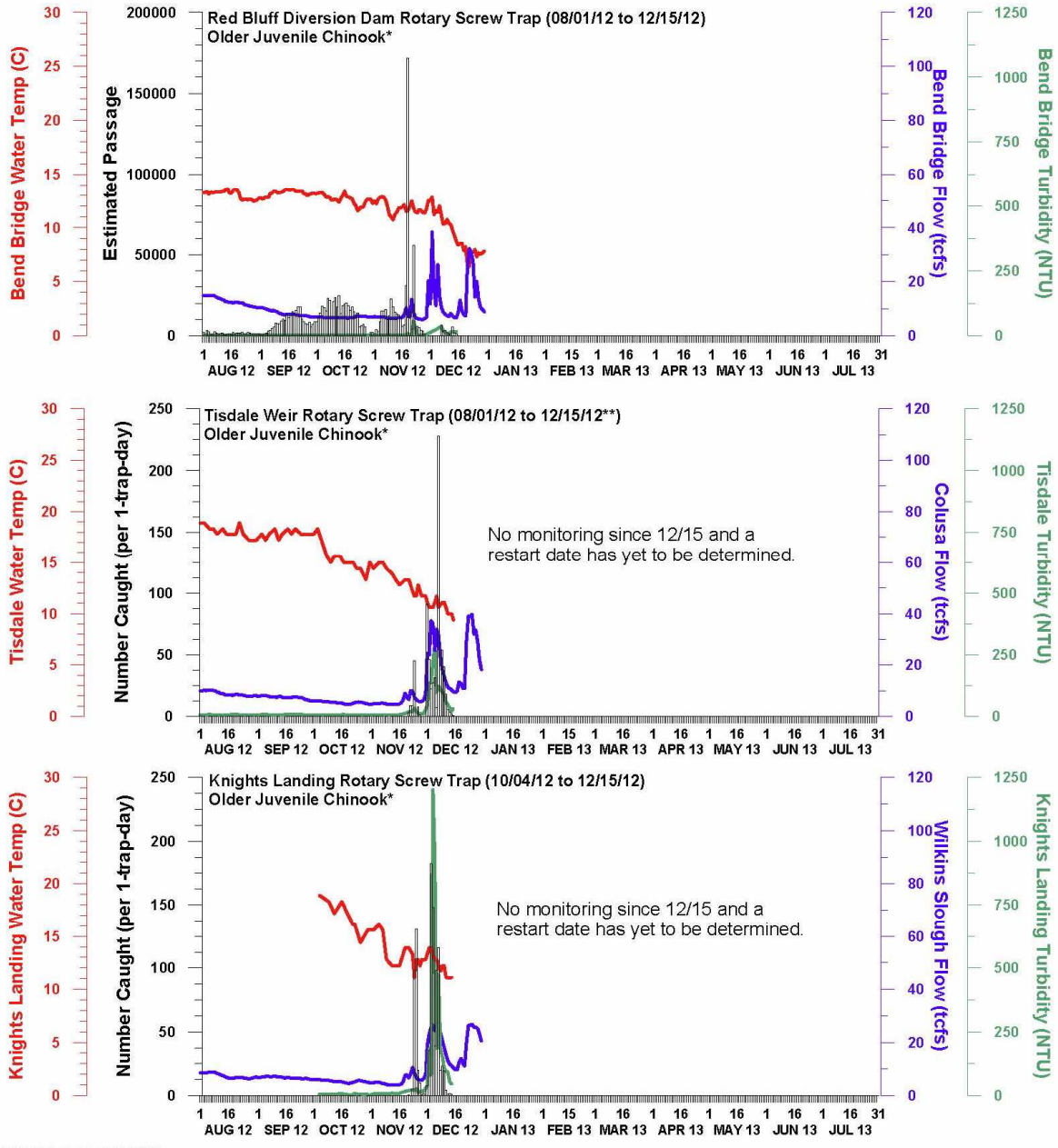
NUMBER OF OLDER JUVENILE CHINOOK AND STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER



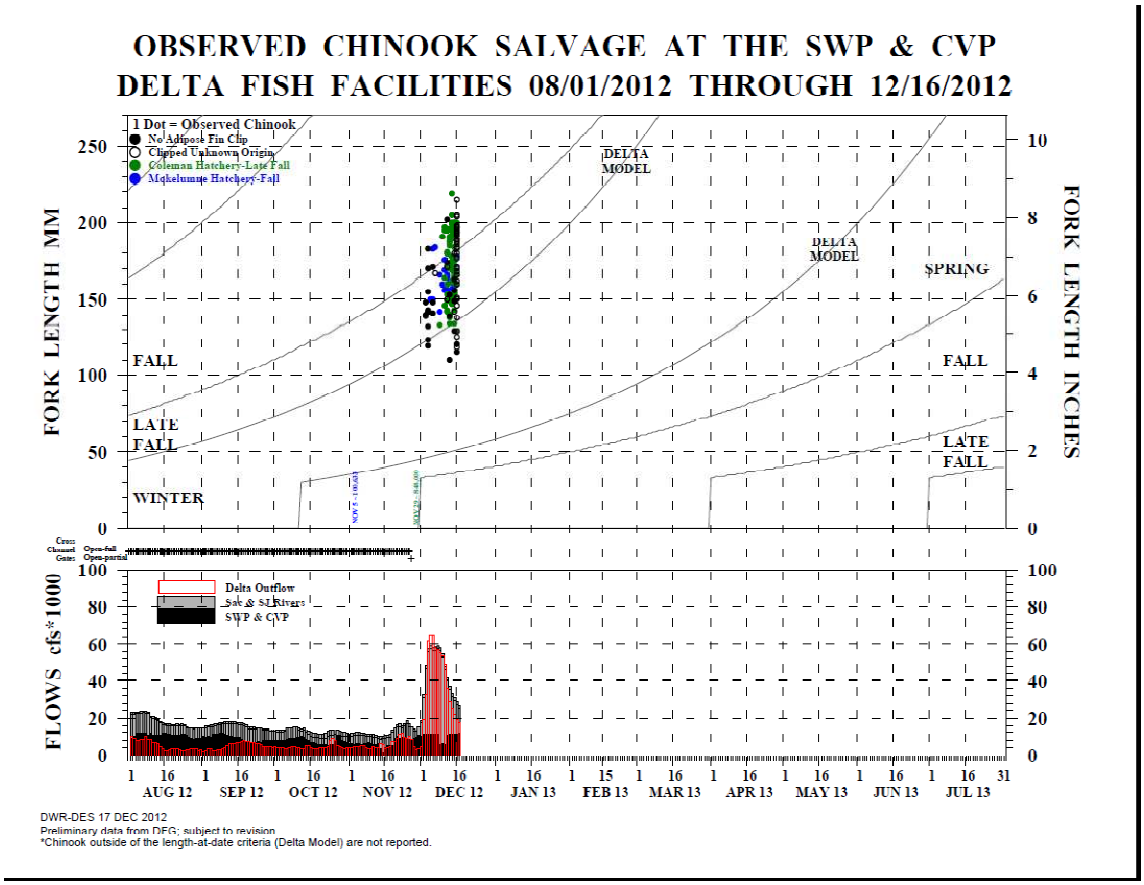


DWR-DES 31 DEC 2012
Preliminary data from FWS and CDEC; subject to revision.
*Older juvenile Chinook defined as any Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).

NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 31 DEC 2012
Preliminary data from DFG, FWS, and CDEC; subject to revision.
*Older juvenile Chinook defined as any Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
** Tisdale Weir: One older juvenile caught on 9/14 and 43 older juveniles caught on 11/25. However, CPUE was not calculated due to problems with the cone clickers. As a result, data are not presented on the graph.


OBSERVED CHINOOK SALVAGE AT THE SWP & CVP
DELTA FISH FACILITIES 08/01/2012 THROUGH 12/16/2012
1 Dot = Observed Chinook
No Adipose Fin Clip
Clipped Unknown Origin
Coleman Hatchery-Late Fall
Mokelumne Hatchery-Fall
DELTA MODEL
DELTA MODEL
SPRING
FALL
FALL
LATE FALL
LATE FALL
WINTER
FORK LENGTH MM
FORK LENGTH INCHES
Cross Channel Gates: Open-full Open-partial
Delta Outflow
Sac & SJ Rivers
SWP & CVP
FLOWS cfs*1000
AUG 12
SEP 12
OCT 12
NOV 12
DEC 12
JAN 13
FEB 13
MAR 13
APR 13
MAY 13
JUN 13
JUL 13
DWR-DES 17 DEC 2012
Preliminary data from DFG; subject to revision
*Chinook outside of the length-at-date criteria (Delta Model) are not reported.

Operations (12/18/12)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	7,100 (might decrease tomorrow down to 5,000 cfs, and then down to 1,500 cfs by Thursday for 2 weeks)	Jones Pumping Plant	4,500 (will decrease to 1,000 cfs on Thursday)
Reservoir Releases (cfs)			
Feather - Oroville	2,075 (down to 1,750 cfs today at noon)	Nimbus	6,000 (will increase again this evening to 7,000 cfs)
		Sacramento - Keswick	4,500
		Stanislaus - Goodwin	275
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	396 (37)	San Luis (CVP)	636 (75)
Oroville	2,339	Shasta	3,066
New Melones		Folsom	605
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	24,030
Outflow Index (cfs)	13,600	San Joaquin River (cfs) at Vernalis	1,390
Total Delta Inflow (cfs)	26,308	OMR (daily) (cfs)	-9,000
Water Temperature (°F)		OMR 5 day (cfs)	
X2 (km)	64	OMR 14 day (cfs)	
E/I (%)	25.2 (14-d avg.)		

Weather: The forecast for Wednesday (12/19/12) is for rain to begin in the north and by Thursday, the Sacramento Valley will also get some rain; rain on Friday and Saturday will most likely be more widespread. Because the storm will be coming from the north, this will be a colder front with more snow; precipitation will probably be only in the Valley. Inflows into Shasta were not that high considering the last storm; therefore, there must have been more snow than rain in that area. Snow levels in the Shasta area could be down to about 500 feet this week.

Turbidity: Turbidity in the Delta at the three monitoring stations for delta smelt has approached 12 NTU; Prisoner Point is >12 NTU. Excess conditions were declared on 12/1/12.

RPA Action IV.3 Language Clarification: Clarification was sent out in the notes from last week. There are more comments to come from DOSS so we will wait until the next meeting on 1/2/13 to finalize the language. There was discussion about clarifying that the operators needed 2–3 days to make a change in flows/exports. If another action trigger is exceeded during an action response, does that warrant another 3-day action response? Does each trigger exceedance warrant an additional 3 days that is separate from the original 3-day action response? We should have a separate document of the "RPA Action IV.3 clarification" that is not part of any week's DOSS notes so that the clarified action does not get lost within any given week's notes on the

website. One suggestion of the interpretation of the action response was that in spite of export reductions, if salvage is still above the threshold during the first 3 days (*e.g.*, on the 2nd of the 3 days), the 3 days are continued moving forward so that the operators are obligated for only 1 additional day (and since that 1 additional day would continue the action response, the intended protection is immediate) and not 3 additional days after the first 3-day period has ended (with a less-than-desirable gap in protection).

DWR suggested that NMFS, DWR, and Reclamation meet to discuss the action response in more detail and clarify the procedures. DOSS will review and finalize the language at a future meeting.

Request from WOMT for Winter-Run Juvenile Production Estimate (JPE): WOMT requested that DOSS develop a preliminary JPE for use by January 1, which is when OMR flow management begins based on RPA Action IV.2.3. There are two ways to calculate the JPE: by using the actual number of winter run passing Red Bluff Diversion Dam (RBDD) or by using the DFG estimate of winter-run escapement from carcass surveys.

Last year, as a result of the low winter-run spawning escapement, DOSS suspected that the official JPE-based loss density trigger would be less than the 2.5 fish/TAF minimum provided in Action IV.2.3; therefore, before the issuance of an official JPE and JPE-based loss density, DOSS agreed to implement the minimum loss density of 2.5 fish/TAF for the first-stage trigger, and 5.0 fish/TAF for the second-stage trigger. The expectation this year is that the JPE will be higher and that the first stage of the JPE-based loss density trigger will be >2.5 fish/TAF. Because we won't have the final DFG estimates and data until mid-January, WOMT asked DOSS to advise what to use for the daily loss density trigger before the JPE is finalized.

It was noted that DOSS could use the minimum loss density of 2.5 fish/TAF until the JPE is finalized, but that was the concern. There is a preliminary adult escapement estimate available from DFG and an actual count of winter run downstream of RBDD (which is similar to the NMFS JPE). We just need to ensure that we document the rationale for which the calculation is used.

Israel (Reclamation) mentioned that we are mostly likely already above the minimum loss density trigger, whether we use preliminary numbers based on RBDD or the NMFS JPE; therefore, we should use the calculation that we are most comfortable with to come up with a loss density trigger.

DOSS used the official DFG letter and official JPE triggers in previous years. The question is whether DOSS and NMFS are comfortable using a preliminary JPE and JPE-based trigger. If so, DOSS should proceed with the data we have now and come up with a preliminary JPE.

Some felt that if there is not a JPE, we cannot have a JPE-based trigger; therefore, we cannot implement something that does not exist. We could use a draft point estimate and use the draft number beginning January 1 until we have the final number and then adjust if necessary.

DOSS participants agreed that Action IV.2.3 will be implemented using a preliminary JPE and JPE-based loss density based on preliminary DFG data instead of using the number of fish downstream of RBDD until the final number is received and this preliminary (draft) number will be recorded in the DOSS notes at the next DOSS meeting. DOSS also agreed to respond to

WOMT's request in today's notes and will update WOMT as to what we agreed to do this year. Oppenheim (NMFS) will provide the draft numbers to DOSS within the next day or two.

Mill & Deer Creek Monitoring (RPA Action 11.2.1.3[8]a): Alice Low (DFG) sent out an email (with attached graphs of data from 13 years of monitoring) to DOSS asking for feedback on a proposal to look at flow and temperature criteria instead of actual numbers of fish for a first alert for Delta Cross Channel (DCC) gate operations (RPA Action IV.1.1). The proposal was to use flows >110 cfs or a mean daily increase >50%. We were asked to provide comments on that proposal. Matt Johnson (DFG) was on the call today to provide clarification on the proposal if necessary. It was noted that there appeared to be no consistency of when the spring run came out and that it was largely dependent on flow events. In December, with both low flows and flow peaks, traps weren't running and fish were trickling out under low flows. It was hard to get some sort of coherent pattern over the 13-year data information. The NMFS BiOp uses tributary flows >50% over levels preceding a flow spike as the first-alert trigger for DCC gate closure. This would be something that would go into that first alert, which is either capture of yearling spring run between October and April or an environmental surrogate, which is based on flows. Having an environmental surrogate would remove the reliance on physical RST data; however, there are times in December when we would hit that alert, but that could be caused by trap efficiency. What might be interesting is to look at this as a regression and see whether, if we do get the peaks, the daily catch goes up. There might be some threshold there.

Johnson (DFG) arrived at flows of 110 cfs by looking at the data and looking at the trends. Low noticed that once Deer and Mill creeks reached the 110-cfs discharge, the traps began to catch fish. What happens in the watersheds, once you get into October, is that the nights are longer and there are other environmental factors such as less transpiration of riparian vegetation, and creeks seem to pick up more volume and the associated drop in temperatures. When that occurs, yearlings begin to trickle out. Average flows before October are about 100 cfs in normal-to-dry years, and <100 cfs during a dry year. Johnson put the graphs together, recognizing that the data are "scattered," and that this reflects the nature of wild fish and multiple life history strategies.

Tisdale and Knights Landing catch records for November show that they were not catching anything in October and November until 11/24, and these fish were classified as winter run and late-fall run. Coincidentally, Mill and Deer creeks had a doubling of flows on 11/18 and each fish leaving at that time would have been classified as winter run and late-fall run. It could be presumed that some yearlings left quickly during that 11/18 period and comingled with some outmigrating fish. At RBDD, 160,000 winter run and 11,000 late-fall run passed on 11/19. There is a strong correlation of seeing fish with the "first storm"—a first flush reaction. It is suspected that all spring-run yearlings that wanted to leave in fall left the tributaries after 12/2 with the high flows. In winter months, there is still a trickling out of yearlings and it is difficult to get a handle on those, but during the critical times, operations would have an impact in October and November. Johnson (DFG) expects to have the report completed by early next year for DOSS to look at for a final review.

DOSS agreed that basing the first alert on flows of 110 cfs would most likely work for October and November. An increase in tributary flows is what we're looking for as an indication that spring-run yearlings are entering the system.

Smelt Working Group (SWG): SWG met yesterday morning after 3 days of increasing delta smelt salvage. Concern was high given the number of adults salvaged at the pumps and low abundance this year; therefore, SWG made a recommendation to reduce exports to meet a 14-day

average OMR of -2,000 cfs. SWG used its discretion and reported that conditions warrant any action taken to begin on 12/20. There was salvage of adult delta smelt each day (including 12/17) at both fish facilities. Initially, there was salvage for 2 days at SWP, then none at SWP and some at CVP for a few days; by Monday, there was salvage at both facilities. Part of the concern is that the preliminary fall mid-water trawl index is very low (*i.e.*, 35), and that the fish were being salvaged earlier than the typical pattern (indicating adults are moving into the central Delta to spawn). FWS accepted the SWG recommendation during Monday's emergency WOMT call. The projects accepted the recommendation after some debate and agreed to initiate the action response on 12/20. The projects will use the Hutton equation to target a 14-day average OMR and a 5-day average of -2,000 cfs OMR to schedule exports. The projects will cut exports beginning Thursday, 12/20, and monitor OMR. It will take several days to reduce (*i.e.*, make more positive) OMR to -2,000 cfs.

DOSS advice to WOMT and NMFS: None.

Holiday Schedule: Stuart (NMFS) volunteered to lead the DOSS call on 12/26 in Oppenheim's absence (Oppenheim will be available for the call on 1/2/13); however, because the -2,000-cfs OMR action response for delta smelt is more restrictive than any salmon action for the next 14 days, there would most likely be no need for a DOSS call on 12/26. If the salvage data indicate that a salmon trigger has been met, NMFS would still put out a notification but it wouldn't require a DOSS meeting. It was decided that fish salvage data would be forwarded to the DOSS group on 12/26; however, barring any substantial increase in salmon daily losses, a DOSS call would not be needed.

Next Meeting: The next DOSS conference call meeting is scheduled for 1/2/13 at 9:00 a.m.